

# Health Care Workers and Vaccine Preventable Diseases

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# Disclosures

- I have no financial affiliations to disclose
- I will not be discussing any off label uses of medications or devices

# Objectives

- Health care worker (HCW) health is both a patient safety issue as well as a best business practices issues
- Identify the vaccine preventable diseases that are of greatest impact to Health Care Workers (HCW) and their patients
- Discuss how increased rates of vaccination in HCW leads to decreased infection rates in patients as well as lost days of work and productivity amongst HCW

# Maximizing Prevention Benefits for American Business

“We dedicate resources to prevention because, like any successful investment we’ve made, it yields steady returns. Those returns take two forms: a healthier, more productive, more committed workforce and significantly lower overall healthcare costs. For every dollar we invest in our workers’ health, we see a return of more than \$4 in reduced health care costs, lower absenteeism, and improved productivity. Our health care spending averages 4% below benchmarks for our industry. From 2001 through 2009, we avoided more than \$21 million in health care expenditures.”

*William C. Weldon, Chairman and CEO, Johnson & Johnson,  
writing in the Jan-Feb 2011 Harvard Business Review*

# Investing in Prevention Improves Productivity and Reduces Employer Costs

- *Prevention Means Lower Healthcare Costs for Employers*
- With employers covering healthcare costs for 160 million nonelderly American workers,
- Preventing disease and improving health outcomes is a financial imperative for many businesses.
- Would save \$83 to \$103 annually in medical costs per person, much of which could accrue to employers in reduced premiums.
- Medical costs, which would be reflected in lower health insurance premiums.

# When we invest in prevention, the benefits are broadly shared.

- **Individuals benefit:** workers stay productive and healthy—both inside and outside the workplace.
- **Businesses benefit:** a healthier workforce reduces long-term healthcare costs, increases stability and productivity, and improves global competitiveness.
- **Communities benefit:** a community that offers a healthy, productive, stable workforce is a more attractive place for families to live and for businesses to locate.

# Scope of Problem

- Varicella
- Hepatitis B
- Influenza
- Measles Mumps and Rubella (MMR)
- Tetanus Diphtheria Pertussis (TdaP)
- Meningococcal

# Varicella

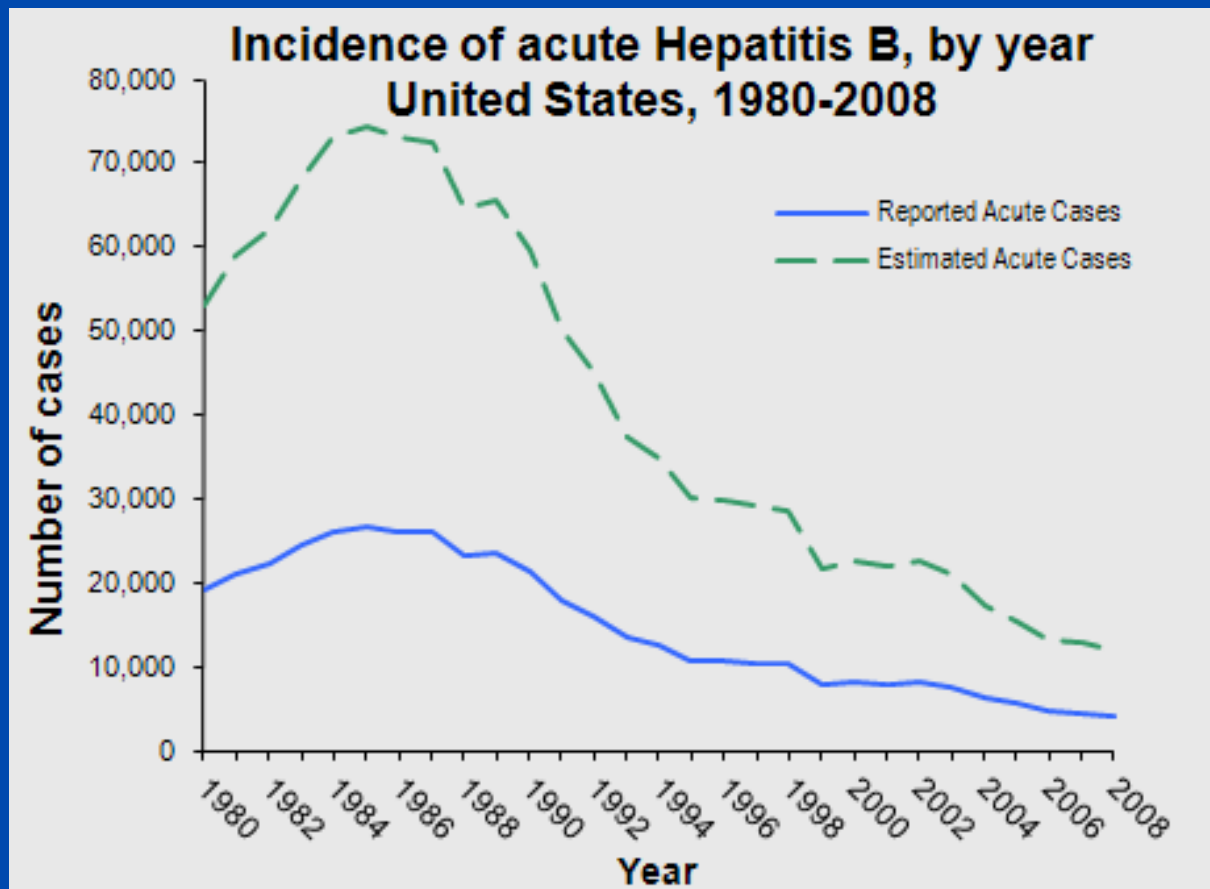
- Annual disease burden prior to routine child immunization in 1998
- Has 2-7 day incubation period before rash appears
- Considered contagious until all lesions are crusted over
- Secondary bacterial infection
- Immunocompromised particularly at risk
- Reyes Syndrome (Aspirin)



# Varicella

- Latent virus (once infected carry for life with variable presentation and viral shedding)
- Shingles is the reactivation of latent Varicella
- Live attenuated virus
  - Documented 2 doses 28 days apart
- Evidence of Immunity based on serology
- Physician diagnosis of primary infection or shingles

# Hepatitis B



*HBV is transmitted through activities that involve percutaneous (i.e., puncture through the skin) or mucosal contact with infectious blood or body fluids (e.g., semen, saliva), including*

- Sex with an infected partner
- Injection drug use that involves sharing needles, syringes, or drug-preparation equipment
- Birth to an infected mother
- Contact with blood or open sores of an infected person
- Needle sticks or sharp instrument exposures
- Sharing items such as razors or toothbrushes with an infected person

HBV is not spread through food or water, sharing eating utensils, breastfeeding, hugging, kissing, hand holding, coughing, or sneezing.

# Hepatitis B

Health care personnel with exposure to blood or body fluids should be immunized

Three dose vaccine with time between first and second at least one month and time between second and third dose at least five months apart

Test for immunity approximately 1-2 months after third dose

# Hepatitis B

- If anti-HBs is at least 10 mIU/mL (positive), the patient is immune. No further serologic testing or vaccination is recommended.
- If anti-HBs is less than 10 mIU/mL (negative), the patient is unprotected from hepatitis B virus (HBV) infection; revaccinate with a 3-dose series. Retest anti-HBs 1–2 months after dose #3.
- If anti-HBs is positive, the patient is immune. No further testing or vaccination is recommended.
- If anti-HBs is negative after 6 doses of vaccine, patient is a non-responder.

# Hepatitis B (non responders)

- HCP who are non-responders should be considered susceptible to HBV and should be counseled regarding precautions to prevent HBV infection and the need to obtain HBIG prophylaxis for any known or probable parenteral exposure to hepatitis B surface antigen (HBsAg)-positive blood

# Hepatitis B (non responders)

- It is also possible that non-responders are persons who are HBsAg positive. Testing should be considered. HCP found to be HBsAg positive should be counseled and medically evaluated.
- Anti-HBs testing is not recommended routinely for previously vaccinated HCP who were not tested 1–2 months after their original vaccine series. These HCP should be tested for anti-HBs when they have an exposure to blood or body fluids. If found to be anti-HBs negative, the HCP should be treated as if susceptible.

# Tetanus, Diphtheria, Pertussis

- Pertussis outbreaks on the rise
  - >10,000 in California
  - >500 St. Louis
  - >1000 in Michigan
- Immunity wanes through lifetime even if HCW had wild type infection
- Humans are the only known reservoir



# Tetanus, Diphtheria, Pertussis

- Whole Cell vaccination
  - Fever and neurologic sequelae of the whole cell vaccine were not tolerable or acceptable in the older children, teens, and adults
- Acellular Vaccine
  - Fever and neurologic sequelae not noted
  - Initially approved in those under 2 and for the 4-6 y booster

# TdaP vs DTaP

- DTaP approved for those under 7
- TdaP approved for those over 7
- Many approaches to increasing immunization throughout the community (i.e. TdaP dose given to new mothers during the hospitalization)
- All HCW who are unsure if they have had any dose of TdaP should receive one as soon as feasible without regard to the interval from their last Td

# Measles, Mumps, Rubella

- Those born prior to 1959 should be considered as immune and do not require further immunization
- Those born after should have documentation of at least two doses of the three valent vaccine OR
- Have titers that show an absolute positive result if intermediate or equivocal then recommend another 2 doses 28 days apart

# MMR

- As with other live vaccines, there is the theoretical risk of transmission to immunocompromised close contacts (spends 4 hours per day on 5 consecutive days)
- Corticosteroids of 2 mg/kg/day (i.e., prednisone at 30 mg po BID) under 14 days will not interfere
- If HCW has had blood products, there is a 4 – 11 month wait period for immunizing with live vaccines

# MMR

- In outbreaks, those who can be immunized becomes more inclusive (i.e. older and younger, immunocompromised, etc)
- Vaccine Adverse Event Reporting System (VAERS)

# Influenza

- CDC and the Advisory Committee on Immunization Practices (ACIP) recommend that all health care workers get an annual flu vaccine.
- Fewer than half of health care workers report getting an annual flu vaccine.
- As a health care worker, by getting vaccinated, you can help protect your family at home as well as your patients at work from getting sick.
- Influenza outbreaks in hospitals and long-term care facilities have been attributed to low vaccination rates among health care professionals.

# Influenza

- Studies have shown that higher vaccination rates among health care workers can reduce influenza-like illness, and even deaths, in settings like nursing homes.
- Health care workers play an important role in protecting public health, and your co-workers need you to be healthy and able to cover your shift.
- Getting a yearly flu vaccine can help ensure your time off is spent doing what you want to do, not staying at home sick.
- Over 80% vaccination rates amongst HCW needed to be effective. Nationwide under 40%

# Influenza

- The flu is a contagious respiratory illness caused by influenza viruses. It can cause mild to severe illness, and at times can lead to hospitalizations and death.
- The main way that influenza viruses are thought to spread is from person to person in respiratory droplets of coughs and sneezes. Influenza viruses may also be spread when a person touches respiratory droplets on another person or an object and then touches their own mouth or nose (or someone else's mouth or nose) before washing their hands.



# Influenza

- Most healthy adults may be able to infect others beginning 1 day **before** symptoms develop and up to 5-7 days **after** becoming sick. Children may pass the virus for longer than seven days.
- Some people, such as older adults, pregnant women, and very young children as well as people with certain long-term medical conditions are at high risk of serious complications from the flu. These medical conditions include chronic lung diseases, such as asthma and chronic obstructive pulmonary disease (COPD), diabetes, heart disease, neurologic conditions and pregnancy.

# Influenza

- Since health care workers may care for or live with people at high risk for influenza-related complications, it is especially important for them to get vaccinated annually.
- As of 2010, AICP/CDC/NIOSH along with dozens of medical and nursing professional organizations have adopted a mandatory (opt out rather than opt in) approach

## Declination of Influenza Vaccination

My employer or affiliated health facility, \_\_\_\_\_, has recommended that I receive influenza vaccination to protect the patients I serve.

I acknowledge that I am aware of the following facts:

- ♦ Influenza is a serious respiratory disease that kills an average of 36,000 persons and hospitalizes more than 200,000 persons in the United States each year.
- ♦ Influenza vaccination is recommended for me and all other healthcare workers to protect our patients from influenza disease, its complications, and death.
- ♦ If I contract influenza, I will shed the virus for 24–48 hours before influenza symptoms appear. My shedding the virus can spread influenza disease to patients in this facility.
- ♦ If I become infected with influenza, even when my symptoms are mild or non-existent, I can spread severe illness to others.
- ♦ I understand that the strains of virus that cause influenza infection change almost every year, which is why a different influenza vaccine is recommended each year.
- ♦ I understand that I cannot get influenza from the influenza vaccine.
- ♦ The consequences of my refusing to be vaccinated could have life-threatening consequences to my health and the health of those with whom I have contact, including
  - my patients and other patients in this healthcare setting
  - my coworkers
  - my family
  - my community

Despite these facts, I am choosing to decline influenza vaccination right now for the following reasons: \_\_\_\_\_

\_\_\_\_\_

I understand that I can change my mind at any time and accept influenza vaccination, if vaccine is available.

I have read and fully understand the information on this declination form.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name (print): \_\_\_\_\_

Department: \_\_\_\_\_

Reference: CDC. Prevention and Control of Influenza with Vaccines—Recommendations of ACIP at [www.cdc.gov/flu/professionals/acip/index.htm](http://www.cdc.gov/flu/professionals/acip/index.htm)

# Resources

- [www.cdc.gov](http://www.cdc.gov)
- [www.fda.gov](http://www.fda.gov)
- [www.flu.gov](http://www.flu.gov)
- [www.idsociety.org](http://www.idsociety.org)
- [www.aap.org](http://www.aap.org)